

Showcasing the Engineers of Tomorrow

Siemens Cyber Junkyard 2008

The 2008 annual Siemens Cyber Junkyard competition is now in its final month. The 10 finalists will be exhibiting their projects at the Siemens annual TIA User Forum at the Birchwood Conference Centre in Johannesburg during the last week of October. Tenders will be adjudicated on the 28th October 2008 and the winners announced at the event's Gala Dinner.

Finalists include one of last year's joint winners – the University of Johannesburg – as well as the University of KwaZulu-Natal, the North West University, the Cape Peninsula University of Technology, Bloemfontein's Central University of Technology, Tshwane University of Technology, the Durban University of Technology, the University of Botswana, Zambia's Copperbelt University and the Namibian Institute of Mining and Technology.

Now in its 6th year, the competition continues to grow among universities as well as companies and enterprises in the private and public sectors, not only due to the financial and practical support provided for engineering faculties at institutions across sub-Saharan Africa but also because the practical skills acquired by participating students make it a fertile recruitment ground for companies looking to employ the cream of the crop as the engineers of tomorrow.

Devendree Karuppanan, Cyber Junkyard project manager at Siemens Industry Automation and Drive Technologies, says the prestige of the competition, coupled with the considerable financial and logistical support available to entrants, has made the competition the premier one of its kind in the country, with even greater enthusiasm generated year after year. "To ensure and maintain the high standards in the Cyber Junkyard competition, the total number of institutions allocated a place in the final has been restricted to just 10 – seven from South Africa and one each from Zambia, Botswana and Namibia," she says.

Designing a Beverage Manufacturing System

This year's project – like that of 2007 – has an automation slant, but with several added factors that make it even more challenging with increased room for creativity and

innovation. It will see the teams designing and building a hot and cold beverage manufacturing machine that incorporates additional complex elements such as a Human Machine Interface (HMI), wireless communication, system status monitoring and Programmable Logic Controller (PLC) programming. The project – to design and construct a beverage manufacturing system – is divided into three main parts: local stations to allow users to input their orders; a remote and central processing station that needs to receive and manufacture orders; and a transportation system or vehicle to deliver the correct beverages to the correct locations.

The beverage manufacturing system will be designed to be implemented in a training centre environment with four training rooms (local stations) and one kitchen (remote or central processing station), but for the purposes of the competition, each institution will only have to make one local and one central processing station.

The local stations will all need to have identical HMIs to allow various customers to place orders. The system has to allow for flexibility in selecting or changing orders before they are sent to the central processing station – via wireless communication.

The remote or central processing station will fulfil several functions: order handling – the ability to receive orders from the local stations, determine which stations sent which orders and ensure that each station receives the correct order; order processing – making the ordered beverages, from dispensing the cup to placing the beverage into the delivery vehicle; raw materials handling – managing the stocks of sugar, tea, milk, coffee, etc; and quality – tracking sell by dates and checking that orders match.

The transportation system's sole purpose is to collect orders from the central processing station and deliver them to the local station that made the request. The delivery vehicle will need to be able to determine the best route to the local station, check for obstacles and re-calculate a route when an obstacle is detected. It will also need to communicate with both the local and the remote stations about delays and unavoidable obstacles.

Tendering to Participate

Unlike previous years, the competition has moved from an invitation to compete, to a tender-to-compete concept. The applicants were invited to submit a proposal in response to a competition tender that detailed the project brief, design considerations, project outcomes

The 2008 Project Brief

The objective of Cyber Junkyard 2008 is to design and construct a beverage manufacturing system that is capable of accepting remote and local beverage orders, accurately processing the orders then delivering them to the correct location or customer with the greatest speed and accuracy.

